**REMARKS**

**EXAMINER**

Claims 1, 2, 4-6, 8, 9, 11-13, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,473,399 issued to Johansson et al. (hereinafter Johansson) in view of admitted prior art, 3GPP, MAC protocol specification, release 1999 (hereinafter 3GPP MAC specification. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,473,399 issued to Johansson et al. (hereinafter Johansson) in view of admitted prior art, 3GPP, MAC protocol specification, release 1999 (hereinafter 3GPP MAC specification), in further view of U.S. Pub. No. 2002/0041567 issued to Yi et al. (hereinafter Yi). Claims 3, 7, 10, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**RESPONSE**

Attached to the end of this response are proposed replacement drawings as identified above and as required by the Examiner.

The claimed invention relates to the handling of unexpected scheduling interruptions in data transmission between a radio link control (RLC) layer and a medium access control (MAC) layer of a wireless device (Paragraph [0002]). The RLC layer and the MAC are part of the layer 2 interface, which acts as a buffer between the relatively high-end data transmission and reception requests of the layer 3 interface, and the low-level requirements of the physical (layer 1) transmission and reception process (Paragraph [0005]). The RLC layer receives data from the layer 3 interface and generates PDUs that are sent to the MAC layer upon request, modified as transport blocks, and the MAC layer sends the transport blocks to the layer 1 interface for transmission to another device.

Because the MAC layer divides transmission of PDUs into a series of transmission time intervals (TTIs), the size and number of PDUs delivered to the MAC layer from the RLC layer is dictated by a TFC data request sent to the RLC layer from the MAC layer. The MAC layer sends the TFC data request to the RLC layer after the RLC layer has indicated that there is data to be delivered, such information coming in the form of RLC entity information (Paragraphs [0008], [0028], and Fig.6). Consequently, before transmission for each TTI, the MAC layer informs the RLC layer of the size requirements and number of PDUs required for the upcoming TTI. This is termed transport format combination (TFC) selection and is used to schedule the transmission of data from the RLC layer to the MAC layer. TFC selection enables the MAC layer to juggle the various requirements of the RLC layers to most efficiently stream data into the physical layer 1 (Paragraph [0008]).

Once the MAC layer responds to the RLC entity information with the TFC data request, **the RLC layer must provide the appropriate block having the requisite number of, and sized, PDUs. Failure to do so can lead to software failure of the wireless device.** This is a criticality in the scheduling of data transmission between the RLC layer and the MAC layer (Paragraph [0010]).

However, unexpected data interruption events may occur which result in the discarding of un-transmitted SDUs in the RLC layer and leave the RLC layer with fewer ready-to-send SDUs than was indicated in the RLC entity information. "In particular, such a discarding event may occur after the submission of the RLC entity information 84, leaving the RLC layer 62 with less (or even no) SDU data 65a than was indicated in the RLC entity information 84." (Paragraph [0010]). "Most of these unexpected data interruptions are the result of command primitives sent from the layer 3 interface 12 to the layer 2 interface 16, and hence are unexpected data interruptions from the standpoint of the RLC layer 62. These include stop, suspend and re-establish command primitives. Additionally, a layer 2 reset event can also be a source of unexpected data interruptions." (Paragraph [0011]).

Thus, the term "data interruption" was and is intended to mean an occurrence

where the amount of SDU data available for transmission diminishes, or more simply, "interruption in data transmission".

To clarify the meaning of the object of the present invention, independent claims 1, 4, 8, 11, 15, and 17 have been amended to include the limitation where the unexpected data interruption leaves "the RLC layer with less ready-to-send SDU data than indicated in the RLC entity information" (Paragraph [0010]). No new material has been introduced. Johansson, in Fig.6 and other scenarios, teaches the amount of ready-to-send SDU data is increased, not decreased, and as such does not appear to anticipate the amended claims.

Claims 1, 4, 8, and 11 have also been amended to further include the limitation that the substitute PDUs "are not control PDUs". No new material has been introduced. Paragraph [0007] defines a control PDU as "Control PDUs are used by the layer 2 interfaces 16 and 26 to control data transmission and reception protocols". Two examples of control PDUs to control data transmission and reception protocols are acknowledgment signals and MRW SUFI (move receiving window super field). MRW SUFI is defined in the incorporated 3GPP specification and also discussed at length in the cited Yi et al. reference. Because both of these example PDUs can cause retransmission or cancellation of scheduled transmission of PDUs, obviously they are control PDUs by definition.

Paragraphs [0033] and [0034] of the current application state that the substitute PDUs may be padding PDUs, an illegal PDU having the reserved bit 154a set, old PDUs previously transmitted, or PDUs obtained by delaying the discarding of data until the next TTI so that the RLC layer will have sufficient SDU data to fulfill the TFC data request. Obviously, none of these substitute PDUs are control PDUs designed to control transmission and reception protocol and as such, the inclusion of this limitation clearly distinguishes the present invention from the prior art.

Additionally, claim 17 has been further amended to include the limitation that "the RLC layer providing the MAC layer at least one PDU that is triggered to be

discarded or interrupted by the unexpected data interruption in response to the MAC request". No new material has been introduced. This limitation is supported by Paragraph [0034] and when combined with the limitation that the unexpected data interruption is not due to a discard timer, the amended claim 17 is not taught in known prior art.

Unlike the prior art, all claims of the present invention insure that the TFC data request is fulfilled at all times, avoiding software failure of the device. The present invention achieves this, when an unexpected data interruption occurs after RLC entity information is provided by the RLC layer to the MAC layer making it impossible to provide to the MAC layer all of the PDUs that were originally scheduled for transmission, by providing one or more substitute PDUs to insure that the TFC data request is fulfilled. The substitute PDUs may be padding PDUs or any available PDUs, as long as the TFC data request is fulfilled.

As such, the Applicant believes that all claims of the present invention are distinct over all cited and known prior art, alone or in combination, and respectfully requests reconsideration and allowance of claims 1-20.

Sincerely yours,

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Attachments